percent species survival for each planting cell. Percent species survival equals 100 times the number of surviving plants in a planting cell divided by the number of plants originally planted in that cell. The next calculation will be to multiply 100 times the number of planting cells with percent species survival equal to or greater than 35% divided by the total number of planting cells in the mitigation site. Since the plant species will not be planted in discrete clusters, the planting cell is the entire mitigation site. It is likely that quadrat samples will be completed rather than direct measurement of the number of plants since the site is greater than one acre.

2) The mitigation site(s) should have at least 80% areal cover, excluding planned open water areas, by noninvasive hydrophytes.

3) Common Reed (*Phragmites* australis) and/or Purple Loosestrife (*Lythrum salicaria*) plants at the mitigation site are being controlled.

4) All slopes within and adjacent to the mitigation site are stabilized.

Monitoring reports will describe the attainment of the four success standards previously described. In addition, the reports will describe the following items in a narrative format.

- Description of monitoring inspections that occurred since the last report.
- Concise description of remedial actions done during the monitoring year to meet the four success standards. These could include actions such as removing debris, replanting, controlling invasive plants species (with biological, herbicidal, or mechanical methods), regrading the site, applying additional topsoil or soil amendments, adjusting site hydrology, etc. A description of any other remedial actions performed at each site.
- Present visual estimates of 1) percent vegetative cover for each mitigation site and 2) percent cover of the invasive species listed under Success Standard No. 3 listed above in each mitigation site.
- Description of fish and wildlife using the site(s) and type of usage (e.g. nesting, feeding, shelter).
- Description, for each species planted, of the general health and vigor of the surviving plants, prediction for future survival and a evaluation of the cause(s) of morbidity or mortality.
- Description of remedial actions that are recommended to achieve or maintain achievement of the four success standards and otherwise improve the extent to

which mitigation sites replace the functions and values lost because of project impacts.

Appendices should include the following information:

- As-built planting plan showing the location and extent of the designed plant community types. Within each community type the plan shall show the location and extent of plantings and each species planted.

- Vegetative species list of dominant volunteer species (those that cover over 5% of their vegetative layer) in each plant community type.

- Representative photos of each site taken from the same locations for each monitoring event.

Post-Construction Assessment

Post-construction assessment of the mitigation sites will be performed after the first five full growing seasons following completion of construction of the mitigation sites. For this assessment, the growing season is assumed to start no later than June 1. In order to ensure impartiality, the individual(s) who prepared the annual monitoring reports shall not perform this assessment without written approval from the Corps of Engineers New England District. The assessment report will be submitted to the Corps of Engineers New England District by December 15 of the year the assessment is conducted. The post-construction assessment will include assessment appendices as described below:

- Summary of original/modified goals and discussion of the level of attainment of these goals at the site.

- Description of significant problems and solutions during construction and maintenance (monitoring) of the site(s).

- Identification of agency procedures or policies that hindered implementation of the plan. Notation of procedures or policies that contributed to less success or less effectiveness than anticipated in the plan.

- Recommendation of measures to improve the efficiency, reduce the cost, or improve the effectiveness of similar projects in the future.

- Appendix with photos of each mitigation site taken from the same locations as the monitoring photos.

3.5 Final Revision to the Restoration Plan in order to conform to ACOE mitigation checklist.

A wetland scientist will be on-site to monitor construction of the wetland mitigation area(s) to ensure compliance with the mitigation plan.

The ditches depicted as straight lines on the attached plans shall be modified during construction to add curves. The above referenced wetland scientist shall provide approval of the final ditch configurations.

Temporary devices and structures to control erosion and sedimentation in and around mitigation sites shall be disassembled and properly disposed of before 1 November three full growing seasons after planting. Sediment collected by these devices will be removed and placed upland in a manner that prevents its erosion and transport to a waterway or wetland. The most likely place where erosion controls will be used is around the upland island that will built in the northern portion of the site.

Prior to the start of the construction an on-site meeting shall be arranged by the permittee with Corps staff, the on-site wetland scientist and the contractor in order to review this mitigation plan.

At the above referenced pre-construction meeting, the proposed locations of planted stock shall be provided to Corps staff. This may be illustrated with polygons and the number of plants or rate of seeding within the polygon. The scale should be in the range of 1"=20' to 1"=100', depending on the size of the site. [NOTE: Iinformation on the quantity of *Spartina* plants proposed for along the creeks for a specified distance or for the plants per linear foot/ yard/meter, shall be provided.

Within planting cells, herbaceous stock is proposed to be planted in densities not less than the equivalent of 3 feet on center for species which spread with underground roots; 2 feet for species which form clumps. *Spartina* sp.shall be planted on 12" centers.

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Photographs

Aerial Photograph – 1952 (DPU 8K 85R)
Aerial Photograph – 1970 (DPS 5LL 101)

Appendix A

Comprehensive List of Vegetation

Table A-1: Comprehensive List of Vegetation Identified within the Vicinity of the Neponset Salt Marsh Restoration Site (Earth Tech 1998 and Palmer, 1997

Common Name	Scientific Name
Tree	
American Basswood	*Tilia americana*
American Elm	*Ulmus americanus*
Apple	*Pyrus malus*
Bay-leaved Willow	*Salix pentandra*
Big-toothed Aspen	*Populus grandidentata*
Black Cherry	*Prunus serotina*
Black Locust	*Robinia pseudoacacia*
Black Oak	*Quercus velutina*
Choke Cherry	*Prunus virginiana*
Cottonwood	*Populus deltoides*
European Mountain Ash	*Sorbus aucuparia*
Gray Birch	*Betula populifolia*
Hackberry	*Celtis occidentalis*
Norway Maple	*Acer platanoides*
Pin Cherry	*Prunus pennsylvanica*
Pussy Willow	*Salix discolor*
Shadbush	*Amelanchier canadensis*
Staghorn sumac	*Rhus typhina*
Tree-of-Heaven	*Ailanthus altissima*
Trembling Aspen	*Populus tremuloides*
Washington Thorn	*Crataegus phaenopyrum*
White Oak	*Quercus alba*
White Willow	*Salix alba*

Table A-1: Comprehensive List of Vegetation Identified within the Vicinity of the Neponset Salt Marsh Restoration Site (Earth Tech 1998 and Palmer, 1997: Cont'd

Shrubs	
Apple	*Pyrus malus*
Bay-leaved Willow	*Salix pentandra*
Bebb Willow	*Salix bebbiana*
Black Cherry	*Prunus serotina*
Black Locust	*Robinia pseudoacacia*
Black Raspberry	*Rubus occidentalis*
Black Willow	*Salix nigra*
Buttonbush	*Cephalanthus occidentalis*
Choke Cherry	*Prunus virginiana*
Common Buckthorn	*Rhamnus cathartica*
Common Elderberry	*Sambucus canadensis*
Crack Willow	*Salix fragilis*
Diamond Willow	*Salix eriocephala*
European Mountain Ash	*Sorbus aucuparia*
Fragrant Sumac	*Rhus aromatica*
Glossy Buckthorn	*Rhamnus frangula*
Gray Birch	*Betula populifolia*
Groundsel Bush	*Baccaharis halimifolia*
Hackberry	*Celtis occidentalis*
Japanese Knotweed	*Polygonum cuspidatum*
Marsh Elder	*Iva frutescens*
Meadowsweet	*Spiraea alba*
Multifloa Rose	*Rosa multiflora*
Northern Bayberry	*Myrica pennsylvanica*
Oneseed Hawthorn	*Crataegus monogyna*
Pin Cherry	*Prunus pennsylvanica*
Purple Chokeberry	*Aronia prunifolia*
Purple Loosestrife	*Lythrum salicaria*
Pussy Willow	*Salix discolor*
Salt Spray Rose	*Rosa rugosa*
Seabeach Orach	*Atriplex hastata*
Shadbush	*Amelanchier canadensis*
Staghorn Sumac	*Rhus typhina*
Sweet Cherry	*Prunus avium*
Toringo Crab	*Pyrus sieboldii*
Virginia Rose	*Rosa virginiana*
Washington Thorn	*Crataegus phaenopyrum*
White Willow	*Salix alba*
Whorled Loosestrife	*Lysimachia quadrifolia*

Table A-1: Comprehensive List of Vegetation Identified within the Vicinity of the Neponset Salt Marsh Restoration Site (Earth Tech 1998 and Palmer, 1997: Cont'd

Herbs	
Annual Fleabane	*Erigeron annuus*
Annual Saltmarsh Aster	*Aster subulatus*
Awl Aster	*Aster pilosus* var. *pringlei*
Bebb's Sedge	*Carex bebbii*
Big Bluestem	*Andropogon gerardii*
Bitter Dock	*Rumex obtusifolius*
Bittersweet Nightshade	*Solanum dulcamara*
Black Bindweed	*Polygonum convolvulus*
Black Grass	*Juncus gerardii*
Black Nightshade	*Solanum nigrum*
Black Raspberry	*Rubus occidentalis*
Black Swallow-wort	*Vincetoxicum nigrum*
Blue Curls	*Trichostema dichotomum*
Blue Heart-leaved Aster	*Aster cordifolius*
Blue Toadflax	*Linaria canadensis*
Blue Vervain	*Verbena hastata*
Bluejoint	*Calamagrostis canadensis*
Boston Ivy	*Parthenocissus tricuspidata*
Broad-leaved Cattail	*Typha latifolia*
Broom Sedge	*Carex scoparia*
Bulbous Buttercup	*Ranunculus bulbosus*
Bull Thistle	*Cirsium vulgare*
Butter-and-eggs	*Linaria vulgaris*
Canada Goldenrod	*Solidago canadensis*
Canada Hawkweed	*Hieracium kalmii*
Canada Thistle	*Cirsium arvense*
Carey's Smartweed	*Polygonum careyi*
Chinese Crab	*Pyrus prunifolia*
Cinnamon Fern	*Osmunda cinnamomea*
Clearweed	*Pilea pumila*
Cleavers	*Galium aparine*
Climbing False Buckwheat	*Polygonum scandens*
Cockspur-thorn	*Crataegus crus-galli*
Common Beggar-ticks	*Bidens frondosa*
Common Burdock	*Arctium minus*
Common Checkweed	*Stellaria media*
Common Cinquefoil	*Potentilla simplex*
Common Dayflower	*Commelina communis*
Common Dewberry	*Rubus flagellaris*
Common Flat-topped Goldenrod	*Euthamia graminifolia*
Common Greenbrier	*Smilax rotundifolia*
Common Milkweed	*Asclepias syriaca*
Praire Cordgrass	*Spartina pectinata*

Table A-1: Comprehensive List of Vegetation Identified within the Vicinity of the Neponset Salt Marsh Restoration Site (Earth Tech 1998 and Palmer, 1997: Cont'd

Herbs (Cont'd)	
Slender-leaved Goldenrod	*Solidago tenuifolia*
Common Mullein	*Verbascum thapsus*
Common Polypody	*Polypodium virginianum*
Common Purslane	*Portulaca oleracea*
Common Reed	*Phragmites australis*
Common Speedwell	*Veronica officinalis*
Corn Speedwell	*Veronica arvensis*
Curly Dock	*Rumex crispus*
Dooryard Violet	*Viola sororia*
Dotted Smartweed	*Polygonum punctatum*
Downy Goldenrod	*Solidago puberula*
Early Goldenrod	*Solidago juncea*
Eastern Lined Aster	*Aster lanceolatus*
Eastern Straw Sedge	*Carex straminea*
English Plantain	*Plantago lanceolata*
Erect Knotweed	*Polygonum erectum*
Evening Primrose	*Oenothera biennis*
False Indigo	*Amorpha fruticosa*
False Nettle	*Boehmeria cylindrica*
Feathertop	*Calamagrostis epigejos*
Fern-leaved False Foxglove	*Aureolaria pedicularia*
Field Dodder	*Cyscyta pentagona*
Field Garlic	*Allium vineale*
Fireweed	*Erechtites hieracifolia*
Flattened Bluegrass	*Poa compressa*
Fox Grape	*Vitis labrusca*
Freshwater Cordgrass	*Spartina pectinata*
Great Plains Flatsedge	*Cyperus lupulinus*
Hairgrass	*Deschampsia flexuosa*
Horse Nettle	*Solanum carolinense*
Horseweed	*Conyza canadensis*
Japanese Knotweed	*Polygonum cuspidatum*
Jimsonweed	*Datura stramonium*
Junegrass	*Bromus tectorum*
Kentucky Bluegrass	*Poa pratensis*
Lady's Thumb	*Polygonum persicaria*
Lamb's Quarters	*Chemopodium album*
Lesser Celandine	*Ranunculus ficaria*
Little Bluestem	*Schizachyrium scoparium*
Many-flowered Aster	*Aster ericoides*
Maple-leaved Goosefoot	*Chenopodium simplex*
Marsh Fern	*Thelypteris palustris*

Table A-1: Comprehensive List of Vegetation Identified within the Vicinity of the Neponset Salt Marsh Restoration Site (Earth Tech 1998 and Palmer, 1997: Cont'd

Herbs (Cont'd)	
Matrimony Vine	*Lycium barbarum*
Meadow Foxtail	*Alopecurus pratensis*
Mouse-ear Chickweed	*Cerastium vulgatum*
Mugwort	*Artemisia vulgaris*
Narrow-leaved Cattail	*Typha angustifolia*
New England Aster	*Aster novae-angliae*
New York Aster	*Aster novi-belgii*
Northeastern Sea-blite	*Suaeda americana*
Northern Crabgrass	*Digitaria sanguinalis*
Orange Grass	*Hypericum gentianoides*
Partridgeberry	*Mitchella repens*
Path Rush	*Juncus tenuis*
Pennsylvania Smartweed	*Polygonum pennsylvanicum*
Perennial Pepperweed	*Lepidium latifolium*
Pitseed Goosefoot	*Chenopodium berlandieri* var. *bushianum*
Pokeweed	*Phytolacca americana*
Poverty Oatgrass	*Danthonia spicata*
Prickly Lettuce	*Lactuca serriola* var. *integrata*
Procelain-berry	*Ampelopsis brevipedunculata*
Purple Lovegrass	*Eragrostis spectabilis*
Purple Sea Lavender	*Limonium carolinanum*
Purslane Speedwell	*Veronica peregrina*
Quackgrass	*Elytrigia repens*
Rough-fruited Cinquefoil	*Potentilla recta*
Rough-stemmed Goldenrod	*Solidago rugosa*
Round-leaved Pyrola	*Pyrola rotundifolia*
Salt-grass	*Distichlis spicata*
Saltmarsh Bulrush	*Scirpus robustus*
Saltmarsh Cordgrass	*Spartina alterniflora*
Saltmarsh Hemp	*Amaranthus cannabinus*
Saltmeadow Cordgrass	*Spartina patens*
Sand Spurry	*Spergularia marina*
Schreber's Aster	*Aster schreberi*
Seaside Alkali-grass	*Puccinellia maritima*
Seaside Goldenrod	*Solidago sempervirens*
Seaside Plantain	*Plantago maritima*
Sheep Sorrel	*Rumex acetosella*
Shepherd's Purse	*Capsella bursa-pastoris*
Shore Knotweed	*Polygonum prolificum*
Showy Goldenrod	*Solidago speciosa*
Silver-rod	*Solidago bicolor*

Table A-1: Comprehensive List of Vegetation Identified within the Vicinity of the Neponset Salt Marsh Restoration Site (Earth Tech 1998 and Palmer, 1997: Cont'd

Herbs (Cont'd)	
Silverweed	*Potentilla anserina*
Silvery Cinquefoil	*Potentilla argentea*
Small-flowered Evening Primrose	*Oenothera parviflora*
Small-headed Aster	*Aster racemosus*
Smooth False Foxglove	*Aureolaria flava*
Smooth Pigweed	*Amaranthus hybridus*
Southern Sea-blite	*Suaeda linearis*
Southern Three-lobed Bedstraw	*Galium tinctorium*
Spotted Wintergreen	*Chimaphila maculata*
Starflower	*Trientalis borealis*
Stinging Nettle	*Urtica dioica*
Strawberry Weed	*Potentilla norvegica*
Summer-cypress	*Kochia scoparia* var. *culta*
Swan's Sedge	*Carex swanii*
Sweet Everlasting	*Gnaphalium obtusifolium*
Tall Lettuce	*Lactuca canadensis*
Tall Meadow Rue	*Thalictrum pubescens*
Tansy	*Tanacetum vulgare*
Threadleaf Beakseed	*Bulbostylis capillaris*
Thyme-leaved Speedwell	*Veronica serpyllifolia*
Ticklegrass	*Agrostis hyemalis*
Virgin's Bower	*Clematis virginiana*
Virginia Creeper	*Parthenocissus quinquefolia*
White Avens	*Geum canadense*
White Campion	*Silene latifolia*
White Sweet Clover	*Melilotus alba*
White Vervain	*Verbena urticifolia*
Whorled Loosestrife	*Lysimachia quadrifolia*
Wild Garlic	*Allium oleraceum*
Wild Madder	*Galium mollugo*
Wood Anemone	*Anemone quinquefolia*
Wood Bluegrass	*Poa nemoralis*
Woolly-pod Vetch	*Vicia dasycarpa*
Yam-leaved Clematis	*Clematis terniflora*